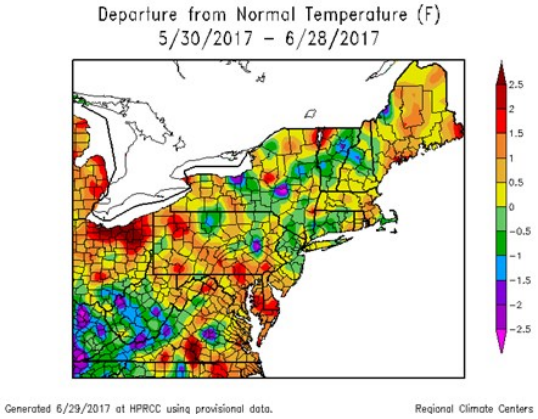
Vermont Forest Health

Insect and Disease Observations—June 2017

Department of Forests, Parks & Recreation
June 2017 vtforest.com

June Weather Summary



Cool and wet summarize the month of June 2017 despite a week during the month that was warm (hot) and dry. From June 8 to 15, temperature records were broken and a string of nearly rain-free days occurred.

Montpelier set a new high record on June 11 of 88 degrees, breaking the old record of 87 set in 2005. Temperature records fell again on June 12 in Burlington with high of 94 degrees breaking the old record of 92 set in 1949. A high minimum temperature of 71 degrees was also set that day in Burlington breaking the old record of 70 set in 2005. Montpelier tied the high temperature of 88 degrees set in 1949.

Early June was drier than normal. This was especially welcome and noticeable after a wet May. The mid to later part of the month was wet. Data from Vermont's five fire weather stations recorded the following rainfall amounts and reflect this trend:

Station/location	Rainfall (in inches) June 1 to June 8	Rainfall (in inches) June 8 to June 15	Rainfall (in inches) June 15 to June 26
Essex Junction	1.94	0.01	6.20
Elmore State Park	1.5	0.00	7.03
Nulhegan/Brunswick	0.93	0.40	4.94
Swezey/Danby	1.61	0.00	1.83
Woodford State Park	4.02	0.17	4.67

Severe storms were common as well during the latter part of the month although damage was generally minimal and localized. On June 19, severe thunderstorms brought down trees and powerlines and flash flooding occurred in parts of southern Vermont. Street flooding was widespread in Brattleboro and some local roads had washouts. A large mudslide closed Route 30 near the Dummerston/Brattleboro town line. On June 29, Burlington set a daily rainfall record with 1.79 inches breaking the old record of 1.67 set in 1922. With saturated soils in place, especially in northern Vermont, heavy rain on June 29-30 set the stage for flash flooding early in July.

The Forest Tent Caterpillar Outbreak Expands

As expected, June saw significant feeding by forest tent caterpillars (FTC) in many locations throughout the state. Defoliation was first reported on June 2, and reports continue to be sent to FPR staff. As in 2016, most reports have come from the northern half of Vermont, with isolated reports further south. New to this year's outbreak are numerous reports from Franklin County and some heavy defoliation in the Vermont Valley (Route 7 corridor) between Danby and Manchester. Counties affected last year continue to experience defoliation in 2017 (Essex, Lamoille, Orleans, Washington).

The severity of FTC defoliation this season has ranged from light feeding, to fully defoliated sites. Photos: Enosburg hillside, J. Halman; trees in Eden, R. Dyer

The cool, wet weather delayed feeding, but may have also provided an opportunity for the spread of diseases, caused by fungi or viruses which are natural enemies of FTC. So far, we know of at least two sites where dead caterpillars have been observed.

Masses of dead caterpillars have been observed, likely due to fungal or viral diseases. Photos: T. Greaves, R. Dyer

FTC feeding will come to an end early in July. In the absence of other stressors, most trees will produce a second flush of foliage. Leaves may appear small and discolored, but this is typical of refoliated trees. In July, FPR staff will begin aerial surveys of FTC damage in order to delineate the extent of defoliation.

Sugar makers tapping at least 10 acres can request an egg mass survey, to be conducted this fall/winter, by contacting Josh Halman (joshua.halman@vermont.gov; 802-279-9999). These surveys indicate the likelihood of defoliation in 2018.

For more details on FTC biology and management, please refer to our Forest Tent Caterpillar Update.

More Hardwood Defoliation Issues

In addition to forest tent caterpillar, other locally common contributors to sugar maple defoliation can be attributed to the cold, wet spring. Symptoms of frost injury, pear thrips damage, and anthracnose sometimes co-occur, making it a challenge to single out one as the primary cause. Pear thrips damage has increased from previous years due to higher insect numbers and weather. Slow leaf development from cool weather increases severity. As a fungus disease, anthracnose is also more common following wet springs. In some areas, frost damage has hit sugar maple foliage, as well as beech.

Frost damage, anthracnose, and pear thrips feeding were observed on sugar maple in June. Photos: E. Crumley, P. Bartlett, and R. Kelley.

Satin moth defoliation of quaking aspen is more widespread than in 2016, and is quite noticeable along interstates and other roadways. Native to Eurasia, this insect was detected in New England in 1920. The next generation will feed briefly in late summer before overwintering as young larvae in silken webs, usually attached to twigs and branches.

Satin moth defoliation of quaking aspen (above) is noticeable along interstate corridors. Maple dieback (below) in east-central Vermont may be related to drought conditions that persisted into the spring in that part of the state. Photos: B. Schultz, D. Paganelli

Maple Dieback

Maple dieback has been reported from multiple locations in eastern Vermont where drought conditions had persisted into early spring this year (see the drought maps in our April observations). These are mostly landscape trees on ledgey or gravelly sites where symptoms had not been observed in 2016. By mid-June, upper crown dieback was significant. On some trees, the foliage on living branches was of good size and color, suggesting that plentiful moisture later in the spring is allowing trees to recover and rebuild their crowns.

Hemlock Borer

We continue to receive reports of pockets of hemlock mortality, with Hemlock Borer a contributing factor. Hemlock borers are secondary pests, meaning they only attack trees that are stressed for other reasons. However, trees may die quickly once they are infested with the borers.

One of the first indicators of hemlock borer is woodpecker activity. Woodpeckers remove outer bark exposing the redder bark underneath. Closer examination will show small irregular woodpecker feeding holes and narrow bird toenail scars. The bark is often easy to remove, exposing broad tunnels on the surface of the wood which may be tightly packed with fine sawdust. These are created by the hemlock borer larva, a segmented legless white grub with a flattened head.

Woodpeckers seeking a meal of hemlock borer larvae chip away bark of infested trees, exposing the red bark beneath. Hemlock borer larvae feed and excavate galleries just beneath the bark, but do not construct tunnels in the wood. Photos: R. Freeberg

Hemlock borer damage is much more common after dry years, when small groups of dead hemlocks may be found, particularly on ledgey sites. Other stresses which commonly promote hemlock borer attacks include sudden exposure, grade or water table changes that often accompany development, soil compaction, and wounding. Wind damage to roots could also lead to successful attacks; violent storms may account for an infestation appearing out of nowhere.

Hemlock borer attacks are often observed on open-grown or edge trees. Theses trees are more exposed to soil temperature extremes and drought stress, and more likely to be damaged by vehicles or equipment. Foot traffic may have more of an effect than is often recognized in terms of influencing water balance for trees.

There is little risk to healthy hemlocks near infested trees. One study indicates that hemlock borer attacks are not successful unless 60% of roots are dead. That's just a single study, but if it reflects wider reality, infested trees are substantially compromised even before they are attacked. There's consensus that maintaining tree vigor is key to preventing attacks. Think twice about salvage if it will damage or expose residual hemlocks.

Spotlight: Giant Hogweed

Giant hogweed (*Heracleum mantegazzianum*) is a member of the carrot family (Apiaceae), and originates from the Caucasus Mountains and Asia. It is thought that this plant was brought to North America in the early 1900's to be displayed in arboreta and gardens (potential epicenter: Rochester, New York). Giant hogweed is a federally listed noxious weed, and therefore included in the Vermont Noxious Weed Quarantine.

This plant reaches heights of 7-20 feet, with leaves up to 5 feet across and flower clusters up to 2.5 feet. It becomes rather conspicuous when July rolls around in Vermont. From June to July, suspected sightings of this plant often increase because native look-a-likes, such as American cow-parsnip (*Heracleum maximum*) and purple-stemmed angelica (*Angelica atropurpurea*), are also in bloom.

A few quick ways to determine what you're observing include the **shape of the flower clusters** (hogweed has an "umbrella" shape, cow-parsnip is "flat topped"), presence of **coarse white hairs** at the base of the leaf stalk, and **number of rays** within the flower cluster (hogweed has 50 or more rays within the flower cluster while cow-parsnip has only 15-30). **Purple splotches** and deeply, **deeply incised leaves**, as well as **average heights of over 10 feet** truly set giant hogweed aside from its look-a-likes.

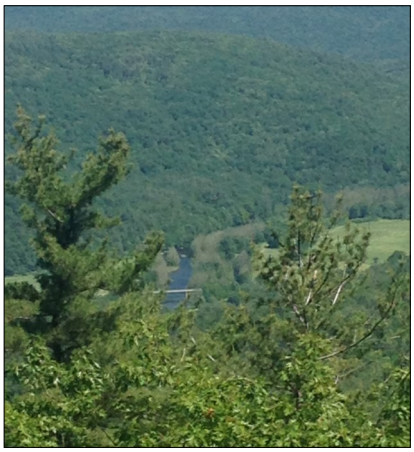
(a & b) Giant hogweed has purple splotching on stems, coarse white hairs at the base of leaf stalks, and umbrella-shaped flower heads; (c) Purple-stemmed angelica has tall purple stems, with globe-shaped flower heads; (d) American cow-parsnip has flat-topped flower heads and tall green stems. Photos: R. Routledge, L. Mehrhoff, P. Gorman, and W.M. Ciesla

Key characteristics for identification of hogwood look-alikes: American cow-parsnip (native to North America) can reach heights of 8 feet or more and prefers disturbed areas like roadsides, meadows, and stream banks. This plant is a normal part of the flora across much of the northern areas of the US. If there is worry about human health, or they are at heavily trafficked areas such as trailheads, removal may be warranted, but chemical reactions from cow parsnip are less severe than giant hogweed. Purple-stemmed angelica (native to North America) has globe-shaped flower heads, purple stems, and enjoys disturbed areas, meadows, roadsides, and stream banks. Additional resources include a NY-DEC Comparison Guide to hogweed look-a-likes and a comparison guide from Connecticut.

In Vermont, populations are isolated but expanding locally. If you think you've found giant hogweed, submit a report through the 'Report It' page on VTinvasives.org,

Sycamore anthracnose was widespread…

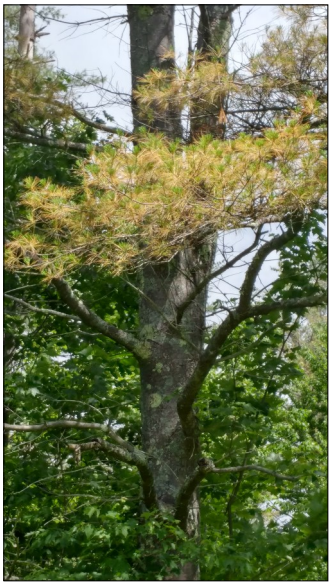
Correction. Sycamores are not widespread. But wherever they grow, they have been hit by anthracnose. On sycamore, anthracnose causes shoot mortality as well as defoliation. Damage is most severe in lower branches, but many trees had symptoms throughout the crown by early June. By late June, as foliage continued to develop, sycamore crowns were looking green again, although new foliage was tufted and the crowns generally thin.



Sycamore anthracnose rarely kills, but it can make trees unsightly and cause large areas of the tree to die back. Photos: B. Schultz, T. Morton

Browning White Pine

White pine needle damage is widespread again this year. In many years the browning of last year's needles has been widespread by Memorial Day. However, in 2017, symptoms didn't develop until the second week of June. With heavy winds and rains, many brown needles were already cast by late June. Needle damage continues to affect some trees more than others. In our monitoring plots, the same trees have the most severe symptoms year after year; some are now exceedingly thin.



The appearance of these white pines in Richmond is typical of observations in many parts of the state. Photos: J. Halman

Red Branches on Balsam Fir

We continue to see red flagging branches on balsam fir, and entire trees that have died suddenly. Balsam woolly adelgid is responsible for at least some of the fir symptoms we are observing.

Dutch Elm Disease

Branch flagging from Dutch elm disease is noticeable and widespread. Wilting and leaf color change are symptoms of DED that usually start to appear about a month after trees leaf out in the spring.

A Picture is Worth 1,000 Words

Euonymus caterpillar webs can envelop whole trees (and other plants and objects in the vicinity) as these caterpillars have done in Bethel. Native to Europe and Western Asia, this insect was first detected in Ontario in 1967. Photos: J. Esden

Fire Blight, a disease that has affected this apple tree in South Woodstock, is spread when the causal bacterium, Erwinia amylovora, is transferred by insects or rain to the floral stigma. Photo: J. Esden

Gypsy Moth Caterpillars, which have been worrying folks in neighboring states, have put in a few appearances in Vermont this year, including on a birch tree in the Hyde Park yard of our Orleans county forester. Let us know if you're seeing gypsy moth too! To date, we haven't had reports of any forested areas that have been defoliated. Photo: J. Nunery

This Fir Broom Rust witches' broom, with its blister-like fruiting bodies (aceia), was seen on balsam fir in Springfield in June. Infected needles will drop in the fall, and the broom will grow larger next year. Photo: J. Esden

What is it? Ann Hazelrigg, with UVM Extension, shared this interesting photograph. According to her sources, "it's from where a swarm of bees alighted before moving on to a new location. If the swarm is on a branch for a few hours, it starts to make a comb."

FORESTS, PARKS & RECREATION VERMONT
AGENCY OF NATURAL RESOURCES

For more information, contact the Forest Biology Laboratory at 802-879-5687 or:		
	Windsor & Windham Counties.....	Springfield (802) 289-0613
	Bennington & Rutland Counties.....	Rutland (802) 786-0060
	Addison, Chittenden, Franklin & Grand Isle Counties.....	Essex Junction (802) 879-6565
	Lamoille, Orange & Washington Counties.....	Barre (802) 476-0170
	Caledonia, Orleans & Essex Counties.....	St. Johnsbury (802) 751-0110

Forest health programs in the Vermont Department of Forests, Parks, and Recreation are supported, in part, by the US Forest Service, State and Private Forestry, and conducted in partnership with the Vermont Agency of Agriculture, Food, and Markets, USDA-APHIS, the University of Vermont, cooperating landowners, resource managers, and citizen volunteers. In accordance with Federal law and U.S. Department of Agriculture policy, this institution is prohibited from discrimination on the basis of race, color, national origin, sex, age, or disability.